CLAIMS

What is claimed is:

1. A method of non-stochastically producing a library of chimeric nucleic acid molecules having an overall assembly order that is non-random comprising:

(a) non-randomly generating a plurality of nucleic acid building blocks having mutually compatible ligatable ends; and

(b) assembling the nucleic acid building blocks, such that a designed overall assembly order is achieved;

whereby a set of progenitor templates can be shuffled to generate a library of progeny polynucleotide molecules and correspondingly encoded polypeptides, and

whereby screening of the progeny polynucleotide library provides a means to identify a desirable species that have a desirable property.

2. A method of non-stochastically producing a library comprised of a defined number of groupings comprised of one or more groupings of chimeric nucleic acid molecules having an overall assembly order that is chosen by design, said method comprised of:

(a) generating by design for each grouping a set of specific nucleic acid building blocks having serviceable mutually compatible ligatable ends, and

(b) assembling these nucleic acid building blocks according to said groupings, such that a designed overall assembly order is achieved;

whereby a set of progenitor templates can be shuffled to generate a library of progeny polynucleotide molecules and correspondingly encoded polypeptides, and

whereby the expression screening of the progeny polynucleotide library provides a means to identify a desirable species that has a desirable property.